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SERVICE-ORIENTED ARCHITECTURE CONSULTING FOR PROFESSIONAL SERVICES ORGANIZATIONS

FACILITATING THE SERVICE-ORIENTED ENTERPRISE

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SOA CONSULTING FOR PROFESSIONAL SERVICES ORGANIZATIONS

FACILITATING THE SERVICE-ORIENTED ENTERPRISE

May 2003

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Abstract

Service-Oriented Architectures (SOAs) represent an evolutionary approach to distributed computing that promises a flexible IT environment that leads to business agility. As companies look to leverage the business advantages of Web Services to address strategic business needs, they are increasingly looking to build SOAs. However, SOAs require special skills and expertise. When companies do not have such skills in-house, they turn to consultants, system integrators, and other professional services organizations.

The movement to SOAs present both opportunities and threats to consulting firms: on the one hand, there will be an increased demand for architectural consulting, business process consulting and the implementation tasks associated with building SOAs. On the other hand, as SOAs take hold and Service-oriented process solutions supplant integration solutions, the market for system integration will dry up, requiring system integrators to change their business focus.

This report analyzes the market for SOA within professional services organizations from three perspectives: from the point of view of the consulting firm, who must understand how its business must change; from the perspective of the enterprise user, who must select and manage a consultant; and from the point of view of software vendors who wish to work with consultants to help them meet the needs of their customers.

Key Points:

✦ Market Overview

- Today's professional services firms are struggling to find their long-term value proposition in environments that are in constant change. There is a significant opportunity for PSOs in the short-term for helping companies implement and adopt SOAs, and in the long-term for providing critical business process expertise.

✦ Future Trends

- As Service-oriented process tools mature, system integration will no longer be a separate activity, but will be subsumed into the process orchestration and choreography activities within the Service-oriented process tools.
- The business process design, optimization, and execution consulting market will come to displace the system integration market.
- System integrators will find the low-level integration work diminishing as their customers adopt SOAs, and therefore will need to transition their skills to the Service-oriented process arena to avoid having their market erode substantially.

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I. The Context for SOA Consulting

To understand the market context for SOA consulting, it's essential to understand the context of SOA-based solutions from three perspectives:

- *Business needs* – All consulting starts by understanding the needs of customers and then crafting solutions that address those needs. For consultants, SOA capabilities are one of possibly many skill sets that they can bring to bear to solve a customer's problems.
- *Consultant expertise* – Companies hire consultants either because they provide expertise the company does not have, or because it is more cost-effective to outsource a particular set of tasks than to tackle them with in-house resources. In an emerging market, the need to involve consultants is especially strong since customers desire both knowledge and expertise they don't have in-house. Because SOAs form an emerging market, consultants must acquire a range of new capabilities, expertise, and practices to meet the emerging needs of their customers.
- *Available technology* – As the available IT products, standards, and techniques mature, the technologies that consultants can bring to bear in their work consistently improve over time. Because the technology behind SOAs are in constant flux due to the emerging state of the SOA market, it is up to the consultants to understand the limitations of the technology as well as the strengths, even more so than in engagements that leverage more mature technologies.

To introduce the concept of SOA as it applies to consulting, this report will begin with an analysis of the technology context for SOAs, placing SOA engagements in the context of Web Services.

1.1. The Difference between Web Service and SOA engagements

As covered extensively in ZapThink's existing research (most notably in *Service-Oriented Architecture: Tools and Best Practices* [ZTR-WS107]), the concept of a Service-Oriented Architecture has been around for many years, and has shown promise as well as limitations. Earlier approaches to Service-Oriented Architectures struggled with proprietary technologies, tightly coupled communications, and fine-grained interfaces. Web Services offer a standards-based approach to building SOAs that can enable loose coupling between Service producers and consumers and coarse grained, business-oriented Services that offer asynchronous interfaces. It is this Web Services-based approach to building SOAs that ZapThink's research focuses on.

Many system integration firms have found that Web Services offer an important set of tools for integrating systems.

For the system integrator, Web Services are typically nothing more than another tool in the toolbox.

Web Services offer a standards-based approach to integration for companies looking to reduce the cost and complexity of point-to-point integration between systems, independent of any architectural improvements they might make. As a result, many system integration firms have found that Web Services offer an important set of tools and techniques for integrating systems—in particular, heterogeneous systems. In many cases, today's system integration projects that take advantage of Web Services are not particularly differentiated from those integration projects that use other integration technologies. In other words, for the system integrator (SI), Web Services are typically nothing more than another tool in the toolbox. A useful tool, to be sure, because many SIs use open source tools to build Web Services, and the skills needed to use such tools are less sophisticated (and hence, less expensive) than the skills needed to use

proprietary integration tools like those that traditional enterprise application integration (EAI) vendors provide.

☆ Vendor Focus

Avanade
Beacon IT
Microsoft

SIs are using Web Services to solve complex integration problems without the need to build a true SOA.

ZapThink's research, however, uncovered several examples of extensive, coordinated use of Web Services in complex integration projects. For example, **Avanade** reports the extensive use of Web Services in **Microsoft** .NET projects that sit upon n-tier architectures, both for .NET-specific projects as well as integration projects that leverage the Microsoft BizTalk Server in non-.NET environments. In addition, **Beacon IT** (Japan) has used Web Services extensively on a global supply chain project for a manufacturer that captured and exposed real-time inventory information. The point of these examples is that SIs are using Web Services to solve complex integration problems without the need to build a true SOA.

Overall, ZapThink has identified three basic types of engagements that leverage Web Services:

- *Point-to-point integration applications of Web Services that use Web Services as an inexpensive adapter for connecting heterogeneous systems* – Integration engagements that use Web Services in this manner are typically quite similar to more traditional integration projects that do not use Web Services.
- *The broad application of Web Services to complex integration projects* – examples include n-tier projects like portals and eCommerce engagements, supply chain management projects, and EAI projects that use Web Services extensively throughout the project. Such projects typically expose coarse-grained business Services, but may not offer the location independence and loose coupling of an SOA.
- *True SOA engagements* – projects that include architectural guidance at the enterprise level that provides a framework for building Services within the context of an SOA.

The difference between the first and second types of Web Services projects is mostly one of degree, but those two are fundamentally different from the third type of engagement, because the first two are integration engagements, while SOA engagements are architecture engagements. This contrast between integration and architecture within the context of PSO offerings forms a critical distinction that this report will emphasize throughout.

1.2. SOA Practice Contexts

SOA efforts typically fall within an existing practice.

ZapThink's research showed that few PSOs are establishing SOA practices *per se*. Instead, SOA efforts typically fall within an existing consulting practice area. However, which practice each consulting firm feels is the most appropriate for their SOA efforts varies considerably, falling generally into the following three categories:

- *System integration/EAI practice* – PSOs that consider themselves to be system integrators typically consider building SOAs as an outgrowth of their existing EAI practice. This approach makes sense tactically, because many of the problems that SOAs solve are integration problems. However, many of these SIs have relatively limited architecture capabilities, when compared to firms that have dedicated and comprehensive architecture practices. As a result, there is a risk that over the long term, SIs may have trouble meeting their customers' needs as SOAs become an increasingly important part of the solutions those customers require.

✯ Vendor Focus

netNumina

Decision Point

For consultants who focus on optimizing their customers' business processes, building an SOA to service-enable those processes can offer substantial value to those customers.

- *Enterprise architecture practice* – Many of the consulting firms featured in this report have enterprise architecture practices that offer consulting that focuses exclusively on architectural issues. SOA engagements fall naturally into such practices because SOA is itself a form of enterprise architecture. In fact, consulting firms like **netNumina** with mature enterprise architecture practices have been leveraging the best practices of Service orientation for years, and do not feel that today's SOAs are particularly distinct from the architectural leadership they have already been offering their customers.
- *Business process optimization practice* – As discussed extensively in ZapThink's *Service-Oriented Process* (ZTR-WS108) report, SOAs provide substantial agility and automation capabilities for companies who are orchestrating and choreographing their business processes. For consultants who focus on optimizing their customers' business processes, building an SOA to Service-enable those processes can offer substantial value to those customers.
- *Business portal practice* – To a lesser extent, some consulting firms are also adding SOA services to their business portal practices.

It is important for PSOs to realize that offering SOA services to their customers need not be a practice separate from their other offerings, but can instead leverage the strengths of an existing practice. Enterprise end-users should keep in mind that different consultants will have very different approaches to SOAs. Because the SOA consulting field is still emerging, and the companies offering such consulting do so within different contexts, such as those mentioned

above, it is currently challenging for enterprises to compare the offerings of different consulting firms. The vocabularies these firms use, as well as their methodologies and approaches, can be expected to vary substantially.

1.3. Meeting Customer Needs

Companies look for consultants who can solve their problems, rather than consultants who can use a particular tool.

If you want to hire someone to build a house, you don't look for a hammer specialist; you look for someone who understands all the aspects of building a house. Just so with SOAs, or any other IT approach—companies look for consultants who can solve their problems, rather than consultants who can use a particular tool. Therefore, while this report focuses on SOA consulting, such consulting should always be placed into the greater context of providing solutions to customers' problems.

This solution approach is at the core of most consultants' sales and engagement processes. Consultants seek to uncover customers' pain points, and then consider all the resources at their disposal when crafting a solution specific to those customers' needs. For the PSOs featured in this report, many report SOAs being appropriate tools for solving certain customers' problems, but by no means are SOAs the only approach any consultant recommends for all of their customers. Therefore, an important precursor to any SOA project is to determine whether a Service-oriented approach is appropriate for the customer's needs.

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There are four main problem areas that enterprises typically face that indicate an SOA solution might be the appropriate approach:

- *Integration in heterogeneous environments* – Because SOAs enable companies to embrace heterogeneity in their IT environments, the existence of problems related to the communication among different systems and/or divisions within an organization can often indicate a need for an SOA.
- *Legacy system enablement*– Every company with legacy systems wants access to the data and functionality on those systems. However, current technologies do not allow companies to fully leverage legacy systems. SOAs, on the other hand, provide the loose coupling required to abstract the interfaces and specifics of legacy systems, and as a result are particularly useful when the customer realizes that current business requirements do not completely describe the future requirements for access to those systems. In other words, SOAs are useful when flexible access to legacy functionality is a requirement.
- *Flexible Business-to-business (B2B) integration and communication* – B2B integration issues are often an extension of the internal heterogeneous integration issues facing IT shops, and so SOAs as well as other integration approaches can be applied to B2B integration scenarios. However, some B2B initiatives lend themselves to SOAs better than others. For example, a demand chain project involving resellers and distributors requires more flexibility than a supply chain initiative that requires integration between suppliers and vendors, because companies are looking to increase customer value in the first case, but drive costs out of the system in the second. Therefore, SOAs are most applicable in B2B integration scenarios where flexibility is required.

Some B2B initiatives lend themselves to SOAs better than others.

- *Organic architecture ("rats' nest") issues* – Many enterprises do not have a comprehensive, planned enterprise architecture, but that doesn't mean that they have no architecture—it simply means that their architecture has grown in an unplanned, organic fashion. For companies

that have IT environments that have gone through mergers and acquisitions, siloed IT investments, areas of rapid investment and expansion or contraction, and other uncoordinated growth will often find themselves with a complex, and often irrational architecture. These rats' nests lead to any number of IT crises, and IT managers find themselves fighting fires all the time. An SOA can be the only cost-effective way of dealing with such problems, because SOA offers a cost-effective approach to resolving organic architecture issues that doesn't require the wholesale replacement of existing infrastructure.

- *Lack of enterprise identity management and security policies* – Companies who have problems managing user identity, where users have too many passwords, help desks spend too much of their time resetting passwords, too many people have root access to systems, or the enterprise security policy is inconsistent or incomplete, often require consulting services to address these issues of identity management and security. There are three reasons why identity management requirements can require an SOA approach:
  - Taking a Service-oriented approach to identity management can be the most cost-effective approach to solving the associated problems, because of the extensive need to integrate identity management solutions with a variety of heterogeneous systems.
  - Enterprise identity management and security policies are typically a prerequisite for an enterprise SOA, since SOAs require enterprise-wide security management and enforcement, which increases the urgency of such solutions.
  - Many identity management products on the market today, including those from **Netegrity**, **Oblix**, and **RSA Security**, are increasingly becoming Web Service-enabled, and thus lend themselves to an SOA.

☆ Vendor Focus

Netegrity
Oblix
RSA Security

In general, then, it's important to keep in mind that customers often do not ask for SOAs. Instead, they have particular pain points associated with difficulties meeting specific business requirements. It is then up to the consultant to determine when an SOA is appropriate. Some PSOs report, however, that there are customers who express the need for some particular software functionality to be exposed as a Service. Such a perspective can indicate a willingness to consider an SOA approach, and determining which business-oriented Web Services a company requires is an important part of the requirements definition process for an SOA. Nevertheless, the architectural recommendations that a consultant should make depends upon a broader range of information than the specific Web Services a customer might request.

1.4. Raising the Perception of Architecture

Architecture is defined as the fundamental organization of a system embodied by its components, their relationships to each other and to the environment and the principles guiding its design and evolution.

As discussed in depth in ZapThink's *Service-Oriented Architecture: Tools and Best Practices* (ZTR-WS107) report, the practice of SOA is a subset of the practice of enterprise architecture. An enterprise architecture consists of an aggregated architecture of all the individual IT systems within an organization, where architecture is defined as the fundamental organization of a system embodied by its components, their relationships to each other and to the environment and the principles guiding its design and evolution. Enterprise architectures include not only the human element within the enterprise, but also the systems, people, and organizational constructs at other companies that have relationships with the enterprise, as well as the individual consumers who are that enterprise's customers. Companies typically have relationships with

customers, suppliers, and other organizations that have formal or informal interactions with the company.

In many ways the practice of architecture is still somewhat nebulous, and for many companies, the value proposition for having a formal enterprise architecture is still unclear.

The practice of enterprise architecture—and in fact, software architecture in general—has been steadily growing in respect and importance in IT shops over the last few decades. Nevertheless, in many ways the practice of architecture is still somewhat nebulous, and for many companies, the value proposition for having a formal enterprise architecture is still unclear. This lack of clarity is due in part to the complexity of the subject matter, as well as the lack of any comprehensive, authoritative approach to the practice of enterprise architecture. However, in spite of these limitations, IT organizations are increasingly realizing the importance of enterprise architecture.

The practice of SOA is improving the overall outlook on the practice of enterprise architecture substantially, for two main reasons. First, the agility and thrift benefits of SOAs are straightforward and easy to understand, where the benefits of enterprise architectures in general were harder to pin down, and varied more from company to company. Secondly, SOAs are important to the practice of architecture simply because they are an architectural approach. In other words, to achieve the benefits of an SOA, a company must transcend issues of communication protocols, operating systems, integration styles, and the like, and speak in terms of the overall organization of the systems, people, and organizations within their enterprise and among their partners. In other words, SOAs only work when you have the big picture, and the big picture is enterprise architecture.

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II. Conducting an SOA Engagement

In many ways, conducting an SOA engagement is much like conducting a similar architecture, integration, or business process optimization engagement. It's not the role of this report to provide information into how to conduct a consulting engagement in general, however; rather, this report will provide insight into the differences between SOA engagements and typical IT engagements, highlighting what PSOs should understand to apply their existing capabilities to building SOAs.

2.1. Selling an SOA Engagement

The first fundamental principle of sales is to look for companies with a *need*, a *budget*, and a *sense of urgency*. In the context of SOA engagements, these requirements fall along the following lines:

- *Need* –
  - Does the company have integration problems among heterogeneous systems?
  - Do they have an awareness of need for architectural guidance?
  - Is the company mandated by corporate or industry-wide pressures to adopt Web Services or SOA approaches?
  - Are they experiencing any of the pain points discussed in section 1.3 above?
- *Budget* –
  - Is the company spending too much money on integration already?
  - Do they have an architecture team or committee with an existing budget?
  - Is the company looking to squeeze more value out of legacy or other existing systems?

- *Sense of urgency* –
  - Are their integration or architectural issues leading to immediate issues, like system failures or visibly dissatisfied customers?
  - Has the company had any recent IT security breaches?
  - Are there regulatory or other compliance guidelines mandating adoption by a certain date?
  - Is adoption of SOAs by competitors widespread or rapidly increasing?

There is a further important point to be made about finding budgets for SOA projects. Because today's IT budgets tend to be tight, finding a budget at a customer can be a matter of identifying potential cost savings. This approach works especially well with Web Services integration projects, because showing a substantial return on investment (ROI) is often relatively straightforward. For an SOA project, the cost savings argument can still be a strong one, as long as the customer is open to a discussion of savings that might be more strategic than those of a simple, point-to-point Web Services project.

For an SOA project, the cost savings argument can still be a strong one, as long as the customer is open to a discussion of savings that might be more strategic than those from a Web Services project.

2.2. Getting a Foot in the Door

ZapThink's research also shows that consulting firms must offer smaller initial projects that can lead down the road to full-blown SOA engagements. Such smaller projects can include:

- *Point-to-point integration with XML and Web Services* – For companies that are not yet comfortable with Web Services, it will often make sense for them to initiate a smaller integration project. Because such projects can show high ROI, they can act as stepping stones to more strategic engagements.
- *SOA pilot or proof of concept* – Many companies will wish to begin their SOA initiatives with a pilot project or a proof of concept, the main difference being that a pilot will typically be put to a real business use, while a proof of concept is more of a prototype for illustration purposes. Some PSOs like **Fujitsu Consulting** report that they may have to give away such projects for no charge. Naturally, giving away work is undesirable, but it can be necessary to build acceptance for the technology.

☆ Vendor Focus

Fujitsu Consulting

- *Architecture seminar or workshop* – The consultant must build two kinds of credibility leading up to an SOA engagement: credibility in the SOA approach as well as in the consultant's own expertise. Therefore, some kind of training session or workshop can build this credibility, while bringing the customer up to speed in what's involved in building and running an SOA. **Swingtide**, for example, has had good success with their Quality of Business seminar series for the insurance industry in building awareness for how XML, Web Services, and SOAs can play a role in that industry.

☆ Vendor Focus

Swingtide

- *Enterprise security/identity management reviews* – Because security mitigates risk as opposed to adding value, it offers a different value proposition to the enterprise from other types of engagements. For PSOs who have an enterprise security capability, a security review can often find a budget where there is no budget for any other kind of engagement. Once the door is open, then, it's possible to uncover the identity management issues facing the organization, and those can lead to an SOA engagement, as explained in section 1.3 above.

- *SOA metamodel and roadmap development* – This project focuses on delivering the architectural design artifacts that lay out the structure and organization of the SOA, along with a roadmap that outlines the implementation phases the consultant recommends. The key architectural design artifacts that form the bulk of the deliverables for this project are models. As explained in *Service-Oriented Architecture: Tools and Best Practices* (ZTR-WS107), the models that represent the elements of an SOA constitute the SOA metamodel, which is itself a model that describes the various models that make up the SOA.
- *IT "as is" analysis* – A project to make sense of the existing architecture by identifying the currently running systems and processes, not to fix them, but solely to make sense of the current IT environment.

The first four of the above projects focus on short-term, "big bang" projects with measurable ROI. In contrast, the last two projects—the SOA metamodel and roadmap, and the "as is analysis—are purely strategic, in that the deliverables from this project only add value to the company once further SOA implementation projects are completed. Therefore, the SOA metamodel and roadmap project will typically be more difficult to gain customer acceptance on than the other projects. Nevertheless, this particular project is essential for building an SOA. Some customers will be able to see the strategic value of this project to the extent that they will be willing to fund it. For the other customers, it often makes sense to combine this project with one of the high-ROI projects in order to justify the expense from a tactical perspective.

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2.3. Aspects of SOA Engagements

As discussed in *Service-Oriented Architecture: Tools and Best Practices* (ZTR-WS107), the practice of SOA benefits from the 4+1 view model of SOA, illustrated in Figure II.1 below:

Figure II.1: The 4+1 View Model of SOA

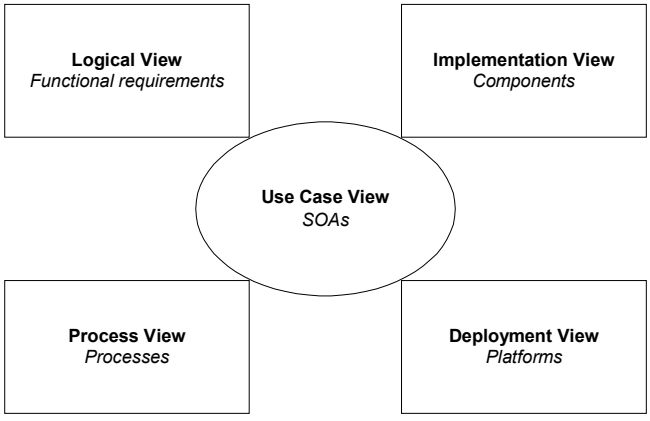


Figure II.1 illustrates that there are different perspectives that participants in an architecture project must take in order to build the architecture. When building an SOA, consultants find their activities falling into the five views represented above, with the addition specifically of a data view and an information view, which are related to the five views above, but are distinguished because of the activities they represent.

The specific activities a consulting firm can expect to conduct within the context of each of these views is as follows:

- *The use case view* – The Service-oriented architect takes this view, because it covers the end-to-end picture of the engagement. In practice, the engagement lead should take this role, which includes coordinating the collection of business requirements, the definition of Services, and the planning of the IT infrastructure needed to support those Services. The bulk of the work in this view involves Service definition: identifying which business-oriented Services the SOA should expose, how those Services should be discovered and accessed, and what interfaces they should have.
- *The information view* – The information architect takes this view. This role focuses on the meaning of the information that moves through the company, who is responsible for it, and what people do with it. The work in this view includes identifying how information is created, transported, secured, stored, and destroyed.
- *The data view* – The data architect takes this view. This role focuses on the taxonomies that the company will use. The end product of the activities in this view are the schemas and namespaces that the business processes and the business Services they contain will reference. The bulk of the work in this view consists of normalizing the various vocabularies across the enterprise, and understanding and delineating just what data the company wants to use.
- *The logical view* – Business analysts work with the company to identify the functional requirements for the engagement. The key difference between collecting functional requirements for an SOA engagement as opposed to a more traditional engagement is that SOAs are especially appropriate when business requirements are in flux. Therefore, analysts working to collect requirements from customers must consider requirements at a level of abstraction higher than specifically requested functionality. These "meta-requirements" include the allowance for change within the context of current requirements.
- *The deployment view* – Systems architects and analysts focus on the deployment view. Because SOAs are a layer of abstraction that hides the complexity of the underlying implementation, many of the systems issues considered from the deployment view perspective are relatively unaffected by the fact that a project is an SOA. The primary exceptions are considerations of the necessary security and management infrastructure. Other differences, like the implementation of a Service registry, are relatively straightforward from the deployment view. As shown in Figure II.2 below, both security and management are two key enablers for SOAs, and must be part of any SOA implementation.
- *The implementation view* – Component architects take this view. As with any standard IT project, the component architect designs the objects that provide the business functionality of the system being designed, as well as their relationships. These designs then form the blueprints that the developers use to create the business logic code that forms the heart of the solution. When building an SOA, however, component architects must keep in mind that the components they are designing will be exposed as Web Services. The component architect must also design the Service model, which acts as the central coordinating model that represents the business-oriented Services to the business, so that these Services can be orchestrated into business process flows. Finally,

Component architects must keep in mind that the components they are designing will be exposed as Web Services.

the component architect must also take advantage of existing architectural best practices, like the eBusiness patterns that **IBM Global Services** uses.

- *The process view* – Business analysts work with the business requirements on one hand and the business-oriented Services represented in the Service model in the other, and craft (or optimize) the business processes that will orchestrate the business-oriented Services. In an SOA, these processes are themselves Web Services (as explained in *Service-Oriented Process* [ZTR-WS108]), and thus the business analyst must be fully versed in the principles of Service-oriented process.

The business analyst must be fully versed in the principles of Service-oriented process.

In many cases, a consulting firm will not actually conduct an engagement by offering architectural services along all of the views listed above. ZapThink's research shows that the bulk of the effort on an SOA engagement tends to fall into three basic categories, depending on the core competencies of the consultant. As a result, SOA engagements tend to take one of the following perspectives:

- *The business process perspective* – For consultants who are most comfortable conducting business process definition and optimization projects, SOA projects tend to emphasize the process view. Requirements drive the processes, which drive the necessary Web Services. PSOs who emphasize the business process perspective include **Geniant**, **Momentum Software**, and **Sapient**.

★ Vendor Focus

Geniant
Momentum Software
Sapient

- *The component perspective* – Consultants who specialize in component-based development (CBD) have expertise in building components, which are software objects that encapsulate a logical, business-oriented grouping of functionality. For CBD specialists, business-oriented Services are often little more than Web Services-wrapped business components. SOAs are therefore organized collections of business components that are exposed as Web Services and discoverable on the network. PSOs who indicated a focus on the component perspective include **Herzum Software**, **Smart421 Solutions**, and **Wellfound Technology**

★ Vendor Focus

Herzum Software
Smart421 Solutions
Wellfound Technology

- *The data perspective* – For consultants who come from a database/data warehouse background, the problems that SOAs address are essentially data problems. These consultants focus on completing and rationalizing taxonomies that describe the documents and messages that the business requires. These taxonomies then drive the schemas and namespaces, and also form the basis for the Web Service discovery mechanism that is essential to the SOA. **ThoughtWorks** is an example of a consulting firm who concentrates on the data perspective.

★ Vendor Focus

ThoughtWorks

Many of the large consulting firms offer SOA engagements with multiple focuses, while some of the smaller firms emphasize one perspective on SOA over another.

In summary, many large consulting firms offer SOA engagements with multiple focuses, while some of the smaller firms emphasize one perspective on SOA over another. However, it is important to keep in mind that even the smaller firms listed above understand SOAs from multiple views—they simply have a focus based on their existing core competencies.

2.4. Technology Selection Considerations

In an ideal world, an architecture engagement would consist entirely of design and organization activities, and not have to deal with questions of technology selection. Of course, this isn't an ideal world, and the fact that SOAs are

Decision Point

The fact that SOAs are emerging means that technology limitations must by necessity be an important area of consideration, even for the "pure" architecture engagements.

Vendor Focus

BEA Systems
IBM
Microsoft

Many enterprises see Web Services and SOAs as changing the economics of selecting a single platform, and are now more amenable to adding .NET to an existing J2EE environment (or vice-versa).

Vendor Focus

Accenture
Avanade
Microsoft
TIBCO
webMethods

emerging means that technology limitations must by necessity be an important area of consideration, even for the "pure" architecture engagements. Furthermore, many SOA engagements are outgrowths of integration projects, or are a part of an overall design and implementation engagement where technology selection is an explicit part of the project.

2.4.1. *The role of open source software*

Open source software is steadily becoming an increasingly integral part of most enterprise IT shops, and this trend continues when building an SOA. A fundamental part of the Web Services value proposition is the reduction in the cost of integration through standardization of system interfaces, and these often substantial cost savings frequently occur mainly as the result of the use of open source software. In addition to the familiar standards of Linux, Apache, and Tomcat are a wide range of Web Services-specific tools that are available as open source. Even when the customer has already made an investment in a major platform like those from **IBM**, **Microsoft**, and **BEA Systems**, open source tools and other software offer compelling solutions for many consultants.

2.4.2. *The .NET vs. J2EE argument*

Because SOAs promote interoperability and abstract the complexity of the underlying platform, building an SOA at least in theory promotes the use of different platforms – such as Microsoft's .NET platform and the Java-based J2EE platform. In fact, many enterprises see Web Services and SOAs as changing the economics of selecting a single platform, and are now more amenable to adding .NET to an existing J2EE environment (or vice-versa), if the new platform offers desired capabilities that the incumbent platform does not adequately provide.

However, ZapThink's research also shows that few PSOs recommend using **Microsoft** .NET as the favored platform for building an SOA in a heterogeneous environment – especially ones that rely on legacy systems. Instead, many PSOs are building SOAs upon J2EE application servers or EAI infrastructures from companies like **TIBCO** and **webMethods**. Where .NET is gaining widespread acceptance as a platform that integrates with an SOA, however, is when a company requires the capabilities of one or more Microsoft server products or where they see business value in the flexibility and ease of use that .NET offers, especially for rich clients. .NET is also gaining traction as a platform for n-tier development in a Microsoft environment. **Avanade**, a joint venture between **Accenture** and Microsoft, is a PSO that focuses on .NET solutions—but not SOAs. Instead, .NET's Web Services capabilities are used for interoperability.

2.4.3. *Key enabling technologies for SOAs*

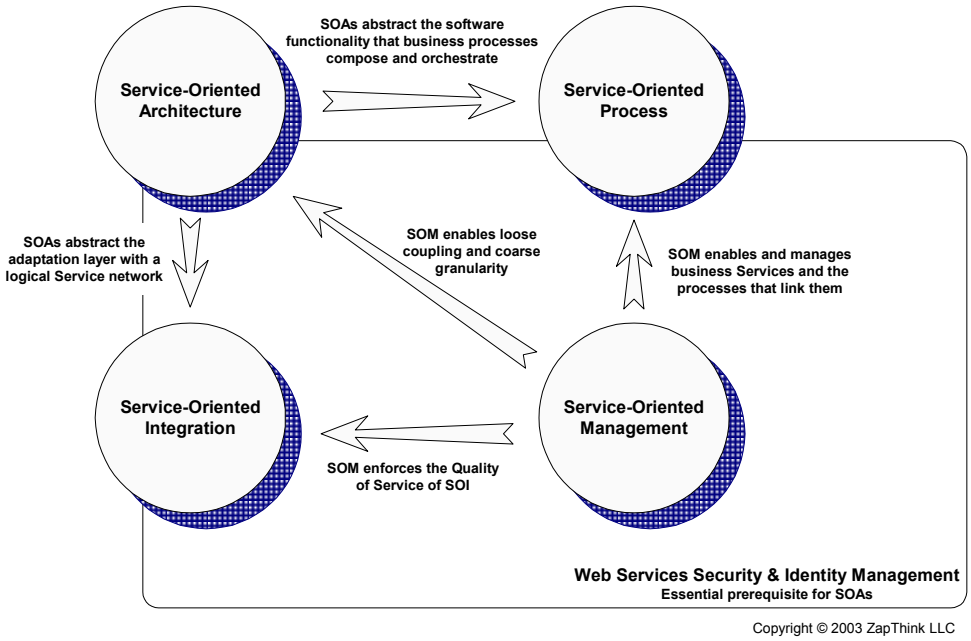
In addition to the market-leading platforms and open source software, there are five key categories of enabling technologies that are each essential for building and maintaining SOAs. It's no coincidence that ZapThink has produced foundational reports on each of these five market segments:

- *Web Services security and identity management* – technology that is an essential prerequisite to any enterprise SOA (covered in *XML and Web Services Security* [ZTR-WS104]).
- *Service-oriented management* – enables loose coupling and coarse granularity, enables and manages the business-oriented Web Services and the business processes that orchestrate them, and also monitors and enforces quality of service (please refer to *Service-Oriented Management* [ZTR-WS106]).

- *Service-oriented process* – business processes that orchestrate and choreograph business-oriented Services—processes that are themselves Web Services that can be recursively composed into more complex processes (see *Service-Oriented Process* [ZTR-WS108]).
- *SOA tools* – software products that focus explicitly on the design, construction, and execution of SOAs (covered in *Service-Oriented Architecture: Tools and Best Practices* [ZTR-WS107]).
- *Service-oriented integration* – flexible, loosely coupled integration based on SOAs, which abstract the underlying adaptation layer (see *Service-Oriented Integration* [ZTR-WS103]).

The relationships among these five enabling technologies is illustrated in Figure II.2 below:

Figure II.2: Key SOA Enabling Technologies



Depending on the scope of the engagement, the consulting firm may need to evaluate and recommend products in any of these categories. ZapThink's research found that most PSOs favor the large, established vendors when possible, but many also work with several of the smaller, newer players in the Web Services software space.

III. Current State of the Market

The IT consulting industry was hit severely by the dot.com crash and the resulting economic downturn. As a result, many PSOs failed or were acquired under unfavorable conditions. This consolidation has strengthened the remaining firms, and has redoubled their efforts to provide visible value to their customers.

The growth of Web Services has been quite positive for IT consulting, because of the cost-savings advantages that result from applying Web Services to

Decision Point

In the current environment, being able to save customers money is often the only way a consulting firm can get an engagement at all.

integration. If the market were stronger, then a technology that allows consulting firms to bill less would not be nearly as popular, but in the current environment, being able to save customers money is often the only way a consulting firm can get an engagement at all.

The movement toward SOAs is more of a challenge for consulting firms, because the benefits tend to be more strategic, as opposed to the short-term, tactical benefits of Web Services implementations. Therefore, the consulting firms that are gaining the most traction in this area are generally the ones that have been following the advice found in Section II. There are also firms like **Herzum Software** and **NetNumina** who are known specifically for their leadership in the architectural consulting market, who have been able to capitalize on that leadership among customers who are looking to build SOAs, even when those customers are working with much larger PSOs for other IT consulting work.

Vendor Focus

Herzum Software
netNumina

3.1. Market Segmentation

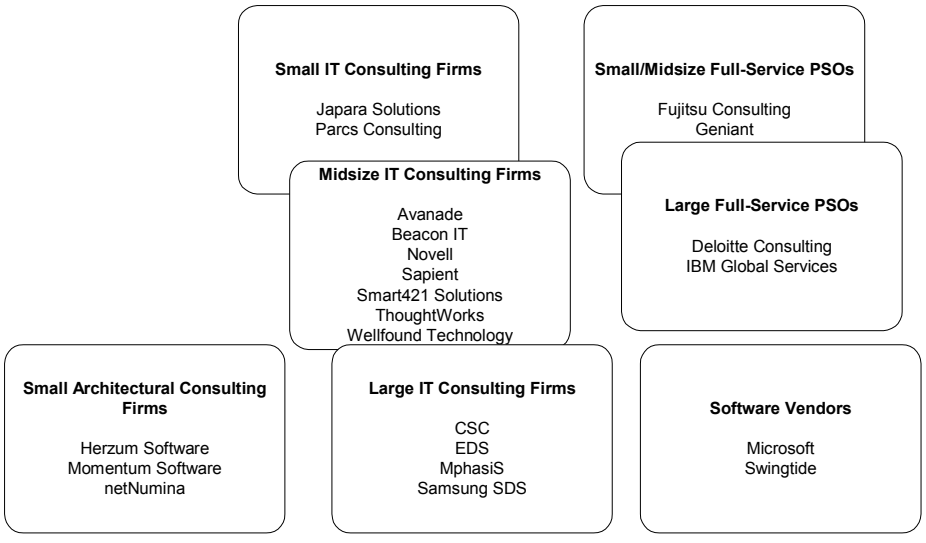
Unlike several other ZapThink reports, none of the companies profiled in this report are startups formed to participate in the market the report focuses on. Instead, most of the firms we are profiling are PSOs that are approaching the SOA space from one of three perspectives: as an architectural consulting firm, an IT consulting firm (typically identifying itself as a system integrator), or a full-service PSO, which typically offers management consulting and business process optimization in addition to IT consulting services.

Vendor Focus

Microsoft
Swingtide

In addition, this report profiles two software vendors, not because they have professional services arms (after all, most software vendors offer some form of professional services), but because these two vendors, **Microsoft** and **Swingtide**, each have special offerings within the SOA consulting space. The other vendors are grouped generally by size, as shown in Figure III.1:

Figure III.1: SOA PSO Market Segmentation



The designation of companies as small, midsize, or large correlates roughly to the number of consultants they employ, but refers specifically to their approach

to the market based upon their size. Small consulting firms tend to be quite specialized, and offer relatively narrow solutions to their customers, often working alongside larger PSOs. Midsize firms often have a relatively narrow range of specialties and often have enterprise customers. Large consulting firms tend to have broad and deep relationships with their enterprise customers, offering them a wide range of services. In addition, full service firms offer management consulting services that go beyond IT consulting services.

3.2. Adoption Picture

In the course of conducting research for this report, ZapThink spoke to PSOs on four continents, including firms of all sizes and a range of specializations. The overall picture that these firms presented on Web Services and SOA adoption was all over the map: from no adoption at all of Web Services to 100%, and a similarly broad range for the adoption of SOAs. The patterns of adoption were as follows:

- North American companies generally represented the most advanced adopters of Web Services and SOAs, with Europe 6-12 months behind. The Far East and Australia lag the US by 12-18 months, but there are examples of early adopter companies in those regions as well. Figure III.2 below illustrates the pattern of Web Services adoption worldwide, while Figure III.3 shows the pattern of SOA adoption.
- XML usage is generally ubiquitous, and XML can no longer be considered an emerging technology. There is a broad, "grass roots" adoption of Web Services across companies of all verticals, both at the enterprise and the larger midsize ranges. SOA adoption is more unusual, but there are many examples of early adopters who have made substantial progress building and operating SOAs.
- The vertical industries who are currently adopting SOAs include investment firms, insurance, banking, government (US federal), manufacturing/retail/supply chain, logistics/transportation, pharmaceutical, and telecommunications (especially in Europe and Australia).

The number of companies who are implementing SOAs is still relatively small compared to the total number of firms, but that being said, there are quite a number of prominent examples.

It's important to emphasize that the number of companies who are implementing SOAs is still relatively small compared to the total number of firms, but that being said, there are quite a number of prominent examples.

Figure III.2 below illustrates the adoption pattern for Web Services globally over the next seven years:

Figure III.2: Global 2000 Adoption of Web Services

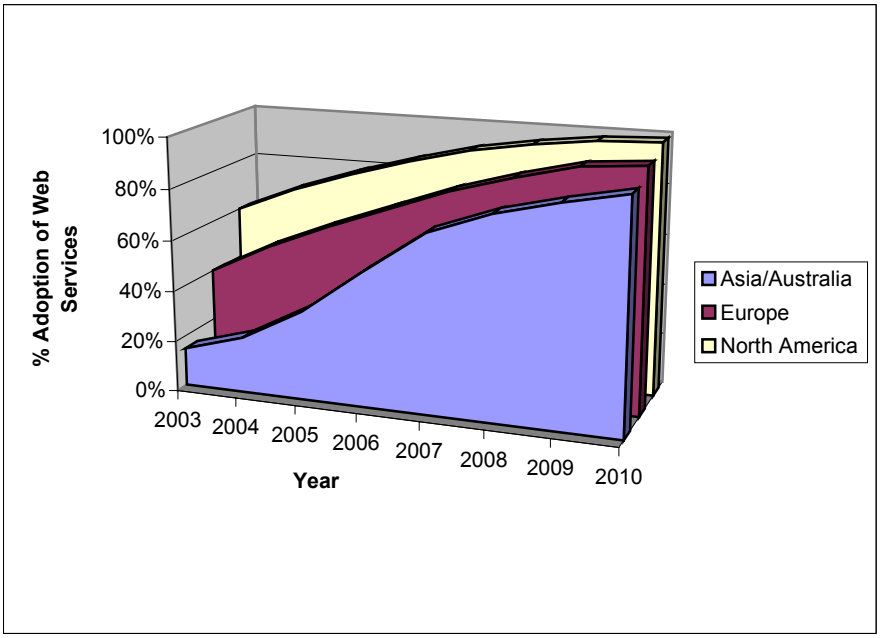


Figure III.2 shows that Web Services adoption in Europe lags North America by about a year, while Asia/Australia lag North America by 12-18 months. It's also important to note that North America and Europe have already passed their inflection point, showing that Web Services are established in enterprises in these regions, while the inflection point for Asia/Australia is still more than a year into the future.

Figure III.3 below illustrates the adoption pattern for SOAs globally over the same time period:

Figure III.3: Global 2000 Adoption of SOAs

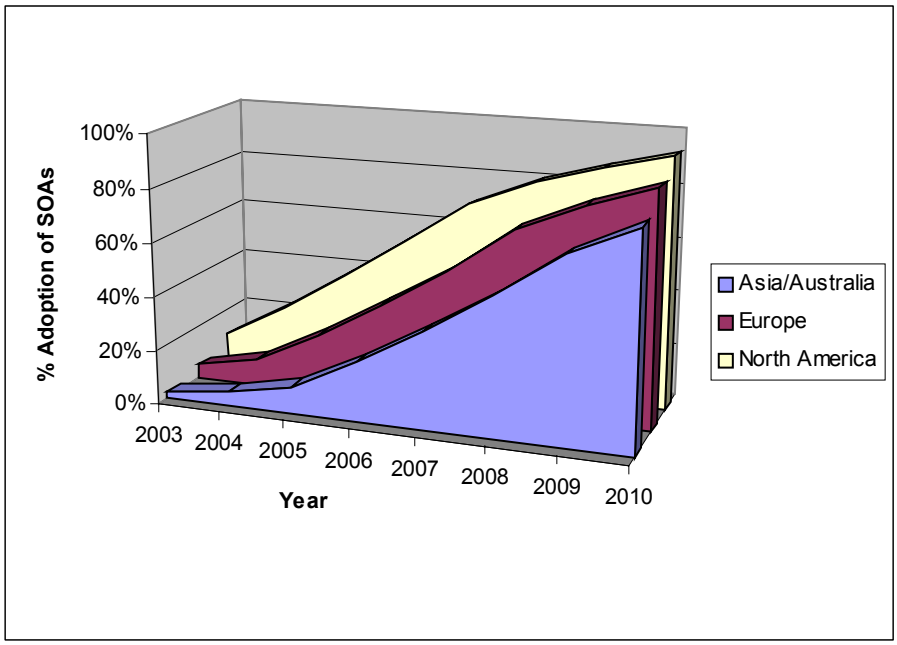


Figure III.3 illustrates that the inflection points for all regions are still in the future, with North America's in the 2005-2006 timeframe, Europe in the 2006-2007 timeframe, and Asia/Australia in the 2007-2008 timeframe. Therefore, SOAs will continue to be an emerging approach for several years to come.

3.3. Examples of SOA Engagements

Several of the vendors profiled for this report provided examples of their SOA engagements with varying levels of detail. While a few consultants were comfortable giving customer names, most were not, and therefore, this report will not identify any of the customers by name. It's also important to point out that the absence of a PSO from these examples does not indicate a lack of SOA engagements, but rather concern about discussing customers without their permission.

- *Airline* – **Parcs Consulting** built a Service-oriented application layer on top of this airline's existing EAI infrastructure and central customer database. Parcs built Web Services with **Sun Microsystems'** Sun ONE Integration Server to integrate multiple systems that accessed customer information. Parcs also used the workflow engine capabilities of the Integration Server for this project.
- *Brokerage* – **MphasiS** has built dozens of Web Services on an SOA for this brokerage, with a focus on the reusability of the Services across the customer's organization. MphasiS developed a trust infrastructure for this company, as well as building a solution that guaranteed conformance to service-level agreements.
- *Brokerage* – **netNumina** was called in to redesign the wealth management platform for the private client group within this brokerage firm. netNumina built an SOA as part of a larger initiative run by CSC.

☆ Vendor Focus

MphasiS
netNumina
Parcs Consulting
Sun Microsystems

However, **CSC** didn't have the specific capabilities to complete this project, so the customer brought in netNumina.

- *Commercial Bank* – **netNumina** conducted a long-running architectural consulting engagement for this bank that included object-oriented, component-based, and Service-oriented recommendations. netNumina also worked with CORBA and J2EE as well as XML and Web Services for this client.
- *Credit Card Company* – **IBM Global Services** provided "building blocks" for an SOA for this credit card company. IGS provided the Services abstraction layer for internal company use. At this point the architecture does not provide for dynamic discovery, and not all interfaces are Web Services.
- *Energy Company* – **CSC** provided a range of services for this energy trading company, including architecture, integration, portals, and an eMarketplace. The legacy environment included PowerBuilder, Visual Basic, and Delphi, all on the Microsoft platform. CSC leveraged Web Services and built an SOA to provide a richer, more versatile interface for internal users, while enabling external users to have a browser interface to the core system.
- *Energy Company* – **Smart421 Solutions** moved a custom point-to-point integrated system to an n-tier architecture with a Web Services interface at this energy company. The Web Services acted as the access and delivery mechanism for messages as appropriate.

☆ Vendor Focus

CSC
Fujitsu Consulting
IBM
IBM Global Services
Microsoft
MphasiS
netNumina
Oblix
Sapient
Smart421 Solutions
ThoughtWorks
webMethods
Westbridge Technology

- *Energy Company* – **Smart421 Solutions** replaced the older client/server and spreadsheet-based trading system with a multitier, Service-oriented pilot solution based on Microsoft .NET. The engagement included streamlining existing functionality by building a component-based architecture and identifying the desired business-oriented Services the customer required.
- *Financial Services Conglomerate* – **MphasiS** has built out different aspects of this financial services firm's SOA over the last three years, including building business-oriented Services for the customer's credit card, retail, and auto financing functions.
- *Insurance Company* -- **Fujitsu Consulting** built a customer portal on top of an SOA for an insurance company based on the **Microsoft** .NET framework.
- *IT Hardware Company* – **ThoughtWorks** built an SOA with Microsoft .NET, **webMethods**, and JMS (Java Messaging Service) for the financial services subsidiary of this IT hardware company.
- *Mortgage Wholesaler* – **Sapient** built a mortgage application origination pricing Web Service for this wholesale mortgage firm in 2001, which is now part of their SOA. The SOA is not just based on Web Services, but also includes Java and **IBM** WebSphere MQ interfaces.
- *Office Supply Retailer* – **Sapient** built an XML interface to enterprise data located throughout this retailers back-end systems.
- *Pharmaceutical Company* – **MphasiS** has built over sixty Web Services on an SOA over the last 18 months for this drug company. Mphasis integrated the security policy interface from **Westbridge Technology**'s XML Message Server with existing security products from **Oblix**.

- *Retail Bank* – **Deloitte Consulting** conducted an architectural proof of concept for this bank where they created architectural "blueprints" that abstracted the functionality of the entire bank as business-oriented Services.
- *Sheet Metal Manufacturer* – **Beacon IT** built a Web Services-based supply chain system for this manufacturer that captured real-time inventory information across multiple plants and warehouses and provided that information in real-time to internal and external users. Beacon IT used the Tamino XML database from **Software AG** to store the inventory information, and created a consistent XML taxonomy for all the products in the supply chain.
- *Telecommunications Company* – **Fujitsu Consulting** built a Web Services proof of concept for this diversified telecom based on Microsoft .NET and the **AmberPoint** Management Foundation.
- *US Government* – **EDS** built an SOA based on Web Services for this portal project for a large branch of the US Government. They implemented a "UDDI-like" repository for Web Service interface information. The goal of this project was to reduce procurement costs.

☆ Vendor Focus

AmberPoint
Beacon IT
Deloitte Consulting
EDS
Fujitsu Consulting
Software AG

IV. Market Trends. Opportunities and Risks

ZapThink believes the move toward SOAs is the next major distributed computing architectural shift, following in the footsteps of client/server and n-tier architectures. As we have explained in previous reports, this shift is more evolutionary than revolutionary, and supplements, rather than supplants earlier distributed computing architectures. Nevertheless, Service orientation represents a significant shift in IT, and therefore represents both risks and opportunities for IT consulting.

4.1. Compensation for the Standards Gap

One significant market trend that primarily represents a short-term opportunity for PSOs could be called the standards gap.

One significant market trend that primarily represents a short-term opportunity for PSOs could be called the *standards gap.* The full range of industry standards associated with Web Services is still in flux, and promises to remain so for several years. Nevertheless, many core standards like SOAP and WSDL are reasonably stable. For companies wishing to build SOAs, they are often in the position of either leveraging products that incorporate immature or incomplete standards, or waiting until the standards mature before proceeding.

While some late majority and laggard companies will elect to wait for standards to mature, it's clear that most companies will want to forge ahead in spite of spotty standards coverage, because significant business benefits are possible today with the standards that are currently in place. As a result, it will frequently fall to the PSO to resolve the individual issues that arise as the result of building a standards-based SOA on top of immature standards—in other words, compensating for the standards gap.

There are standards gaps within each of the SOA enabling technologies illustrated in Figure II.2 above, for example:

- *Web Services security* – At this time, the WS-Security roadmap championed by **IBM**, **Microsoft**, and **VeriSign** is still incomplete, and there are complementary (or competing) standards from other vendors, including SAML, the Liberty Alliance's ID-FF specifications, XACML, XKMS, and others. For companies that have heterogeneous security infrastructures (say, some PKI and some Kerberos), WS-Security

☆ Vendor Focus

IBM
Microsoft
Verisign

promises to address the interoperability among these infrastructures. For the time being, however, consulting firms have an opportunity to solve the issues resulting from the incomplete roadmap, as well as the competing specifications.

- *Service-oriented integration* – Most vendors, including the large business application vendors, are Web Service-enabling their product suites. In theory, therefore, integration among such business applications should be a simple matter of coordinating Web Service producers and consumers. The reality is, however, that the typical business application still has a tightly coupled approach to the functionality it offers, and thus there is a substantial opportunity for the system integrator to focus on the technology implementation details behind the Web Services interfaces to extract the required functionality from the business applications.
- *Service-oriented management* – There is currently no specification for Service-oriented management. OASIS has begun work within the Web Services Distributed Management (WSDM) working group, but it will be several months before this group publishes a specification. In the meantime, companies must rely upon the existing system management standards like SNMP and CIM. Clearly, PSOs will need to step in to insure that the systems providing Web Services interfaces are properly managed and monitored.
- *Service-oriented process* – At this time, it appears that the Web Services Business Process Execution Language (WSBPEL), now under the auspices of OASIS and formerly known as BPEL4WS, has a critical mass of industry support, and will become the dominant standard for Service-oriented process. Several vendors are currently in the various stages of bringing WSBPEL-compliant products to market, but it will likely be one to two years before standards-based process becomes relatively seamless. In the meantime, PSOs will be responsible for leveraging the capabilities of existing business process management tools when orchestrating business-oriented Services into business processes.

Decision Point

As service-oriented process tools mature, system integration will no longer be a separate activity, but will be subsumed into the process orchestration and choreography activities within the service-oriented process tools.

Decision Point

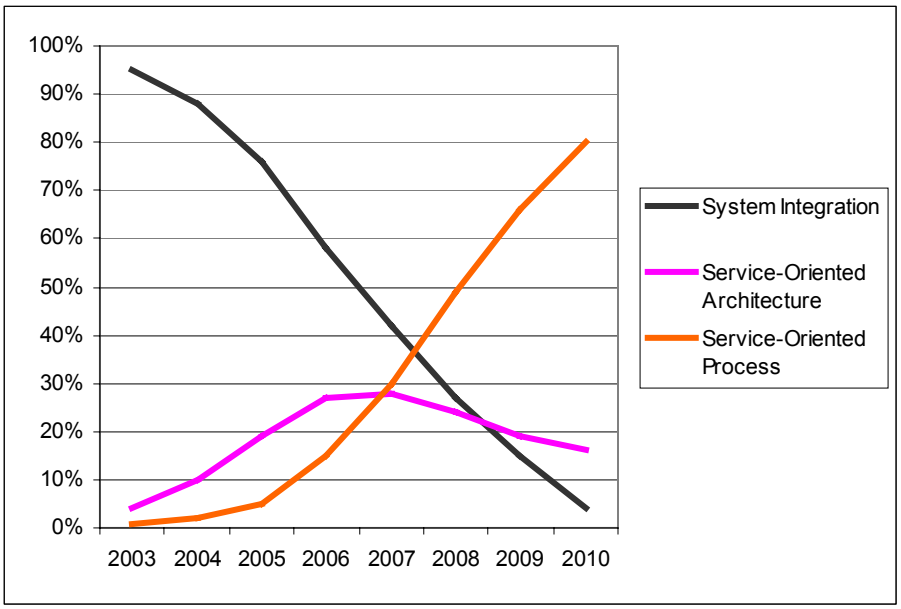
The business process design, optimization, and execution consulting market will come to displace the system integration market.

4.2. Long-term Shifts in Demand

In the *Service-Oriented Process* (ZTR-WS108) report, ZapThink showed that as Service-oriented process tools mature, system integration will no longer be a separate activity, but will be subsumed into the process orchestration and choreography activities within the Service-oriented process tools. Overall, integration will no longer be a market, as integration becomes a feature of all software as a direct result of the movement to Web Services-enable all software. What, then, will happen to system integrators when system integration becomes an automatic feature of all software?

Over the next five to seven years, ZapThink predicts that the business process design, optimization, and execution consulting market will come to displace the system integration market. This shift depends upon the movement to SOAs, because business process management can only replace integration in the context of Service orientation. During this seven-year period, companies will require SOA architectural consulting, but the need for such consulting will eventually peak, as more companies become Service oriented, as shown in Figure IV.1 below:

Figure IV.1: Shift in SI Consulting Activities



Decision Point

System integrators will still find their integration work diminishing as their customers adopt SOAs, and will either need to transition their skills to the service-oriented process arena, or risk having their market erode substantially.

Decision Point

Many consulting firms will have to undergo extensive retraining and reorganization.

On demand is a somewhat nebulous concept that centers on agile businesses that take advantage of flexible IT infrastructures.

Figure IV.1 reflects the percentage of consulting time system integrators will devote to system integration, SOA consulting, and Service-oriented process consulting over time; for those PSOs who offer services other than system integration, this chart applies to that part of their business that consists of system integration. This figure also represents the revenues PSOs can expect to achieve from the respective activities. Naturally, existing architecture practices will move toward SOA engagements, and business process definition and optimization engagements will gradually involve Service-oriented process, as discussed in other ZapThink research.

As explained in Section 1.1, integration activities and architecture activities are quite different, and there will be some system integrators who do not wish to provide SOA architectural services. Their customers will have to find SOA expertise elsewhere. Such system integrators will still find their integration work diminishing as their customers adopt SOAs, and will either need to transition their skills to the Service-oriented process arena, or risk having their market erode substantially.

In general, the shifts in the IT consulting business represented in Figure IV.1 indicate that many consulting firms will have to undergo extensive retraining and reorganization. However, such changes are familiar to the IT consulting world, with the shift from client/server to eBusiness/Web technologies, and the subsequent downturn. Some PSOs won't survive, but others will roll with the changes and come out on top. The key to any consultant's survival in the face of changing customer demands, of course, is to continue to focus on solving customer problems. As those problems change, so must the solutions.

4.3. SOAs as the Key to the Real Time/On Demand Enterprise

The final market trend discussed in this report is actually much broader than SOAs—the movement to the *on demand* or *real time* enterprise. On demand is a somewhat nebulous concept that centers on agile businesses that take

advantage of flexible IT infrastructures, and contains several related concepts that have more specific meanings:

- *Utility computing* – a general term that refers to any of the three following approaches:
  - A managed operations delivery model for IT resources, where companies can call upon a third party to host and manage their IT infrastructure, thus providing access to extra resources to handle those peak loads.
  - A pay as you go financial model for obtaining IT capabilities, where companies can then pay for the resources they use following a metered Services model that changes a fixed IT cost into a variable cost.
  - A shared pool approach to IT resources, where companies centralize their IT infrastructure into a shared pool of resources, providing "use it when you need it" functionality in-house to various users across the enterprise.
- *Grid computing* -- a form of virtualization that takes a large number of systems and combines them into one massive, "virtual" computer, or *grid*, that can handle computation-intensive tasks. Such grids can include widely distributed systems or systems within particular data centers.
- *Self-management, adaptive management, or autonomic computing* – a combination of technologies that help systems recover from problems automatically -- essentially, a "self-healing" capability -- as well as system management capabilities that are inherently flexible, in order to support the dynamic needs of utility and grid computing.

The intent of on demand computing is to enable enterprises to achieve all the benefits of agility (i.e., to become a "real time" enterprise) by virtualizing the necessary IT resources to the point that those resources may or may not be located within the enterprise.

The intent of on demand computing is to enable enterprises to achieve all the benefits of agility (i.e., to become a "real time" enterprise) by virtualizing the necessary IT resources to the point that those resources may or may not be located within the enterprise—which is, in essence, the view of Service orientation that ZapThink promotes in its research. Therefore, the vision of "on demand" is really just an extension of the SOA vision: the role of IT is to provide and support the Services that the business requires, but just how it provides those Services depends on the characteristics of the particular implementation. If it makes sense to pool servers or outsource functionality, so be it, as long as the business has access to the Services it needs. The Services therefore become a kind of conduit between line of business and IT, focusing and providing context for business requirements for IT personnel, while at the same time hiding the complexity of the implementation details under a useful layer of abstraction for line of business users.

The vision of on demand is really just an extension of the SOA vision.

The services become a conduit between line of business and IT, providing context for business requirements for IT personnel, while hiding the complexity of the implementation details under a useful layer of abstraction.

✯ Vendor Focus

IBM

The potential future impact of "on demand" on the professional services industry is enormous. As companies build SOAs, and the principles of Service orientation take hold, there will be opportunities across the entire "on demand" landscape (utility computing, grid computing, self-management, as well as SOAs themselves). **IBM**, in fact, stands alone as the only vendor who clearly understands that professional services actually drives "on demand", because the "on demand" technologies can meet a wide range of business needs, and thus companies must understand their need for agility before they can move forward to solve their problems by applying the appropriate solutions found under the on demand umbrella. For most companies, solving such problems requires engaging the resources of professional services firms who have expertise in SOAs as well as the entire range of "on demand" technologies.

V. Conclusions

SOAs present both opportunities and threats to PSOs. SOAs promise to address issues of heterogeneous environments, inflexible infrastructures, and closed systems by providing an architecture that allows for loosely coupled interoperability, increased usability and reusability, and greater flexibility, with the goal of enabling agile, on demand enterprises. However, architecture doesn't come in a bottle; architecture is a skill set—expertise found only in the heads of professionals. Because SOAs represent an emerging market, such skills are in short supply, and companies will rely upon consultants to provide the expertise they need to move to a Service-oriented IT environment.

The specific opportunities that the movement toward SOAs present to PSOs include:

- Increased architectural definition engagements among enterprises, as they reconsider their architectures and move to SOAs.
- Ongoing Service-oriented business process engagements, as the establishment of SOAs enable greater automation of agile business processes.
- A relatively short-term integration opportunity, as companies adopt Web Services to solve integration problems. However, this opportunity will taper off as integration becomes a built-in feature of all business software.

The specific threats facing PSOs as companies move to SOAs include:

- A long-term decrease in system integration opportunities as Service-oriented process approaches supplant integration approaches.
- The greater need for architecture expertise over development and integration expertise, coupled with a shortage of qualified Service-oriented architects.
- Downward pricing pressures on consulting resulting from the low cost of Web Services projects and ongoing offshore outsourcing.

For software vendors, SOA consulting presents an ongoing sales channel opportunity, and also a way to build visibility in the market as well as real-world experience. For enterprises, SOA consulting will help companies make the transition to Service-oriented environments, offering cost-effective expertise that will help companies achieve their fundamental goal of business agility.

5.1. Key Notes

- This report provides the context for SOA consulting to PSOs, enterprise users, and software vendors.
- Many system integration firms have found that Web Services offer an important set of tools for integrating systems.
- SIs are using Web Services to solve complex integration problems without the need to build a true SOA.
- For the system integrator, Web Services are typically nothing more than another tool in the toolbox.
- SOA efforts typically fall within an existing practice.

- Companies look for consultants who can solve their problems, rather than consultants who can use a particular tool.
- An important precursor to any SOA project is to determine whether a Service-oriented approach is appropriate for the customer's needs.
- Some B2B initiatives lend themselves to SOAs better than others.
- Architecture is defined as the fundamental organization of a system embodied by its components, their relationships to each other and to the environment and the principles guiding its design and evolution.
- In many ways the practice of architecture is still somewhat nebulous, and for many companies, the value proposition for having a formal enterprise architecture is still unclear.
- SOAs only work when you have the big picture, and the big picture is enterprise architecture.
- For an SOA project, the cost savings argument can still be a strong one, as long as the customer is open to a discussion of savings that might be more strategic than those from a Web Services project.
- The SOA metamodel and roadmap project will typically be more difficult to gain customer acceptance on than the other projects.
- Component architects must keep in mind that the components they are designing will be exposed as Web Services.
- The business analyst must be fully versed in the principles of Service-oriented process.
- Many of the large consulting firms offer SOA engagements with multiple focuses, while some of the smaller firms emphasize one perspective on SOA over another.
- Many enterprises see Web Services and SOAs as changing the economics of selecting a single platform, and are now more amenable to adding .NET to an existing J2EE environment (or vice-versa).
- The economic context of SOAs is *thrift*.
- One of the clear benefits of an SOA is that such an architecture helps companies get more value out of existing resources.
- Two approaches to Service-oriented management (SOM) are both essential to building and running an SOA: *active management* and *passive management*.
- The aspects of the SOA that a company should adopt, and the order and timing for that adoption, depend on business issues specific to that company.
- The dynamic discovery capability allows Service consumers to access static Services dynamically, either at design time or runtime, as well as the ability to access dynamic Services at runtime, a capability ZapThink refers to as just-in-time integration.
- Selecting a boutique consultant who focuses exclusively on architecture consulting can be quite cost-effective.
- It is essential that the company maintain an agile perspective on the SOA engagement.
- Partnerships, by definition, must work both ways: they must be of significant value to both participants.

- Most established vendors are Web Service-enabling their software.
- Those vendors who can get traction by signing up referenceable, paying customers not only have solid income, but also have the visibility that is so critical during the sales process.
- Being on the partnership list is a far cry from having a relationship that is actually useful and productive in real customer engagements.
- The number of companies who are implementing SOAs is still relatively small compared to the total number of firms, but that being said, there are quite a number of prominent examples.
- One significant market trend that primarily represents a short-term opportunity for PSOs could be called the *standards gap*.
- On demand is a somewhat nebulous concept that centers on agile businesses that take advantage of flexible IT infrastructures.
- The intent of on demand computing is to enable enterprises to achieve all the benefits of agility (i.e., to become a "real time" enterprise) by virtualizing the necessary IT resources to the point that those resources may or may not be located within the enterprise.
- The vision of on demand is really just an extension of the SOA vision.
- The Services become a conduit between line of business and IT, providing context for business requirements for IT personnel, while hiding the complexity of the implementation details under a useful layer of abstraction.

5.2. Decision Points

- For many enterprises, the skills needed to build an SOA are not located in-house; for those companies, outsourcing aspects of an SOA project to a professional services firm is the appropriate approach to take.
- For consultants who focus on optimizing their customers' business processes, building an SOA to Service-enable those processes can offer substantial value to those customers.
- The fact that SOAs are emerging means that technology limitations must by necessity be an important area of consideration, even for the "pure" architecture engagements.
- Enterprisewide rearchitecture projects can take years. Therefore, it is essential to break up such a project into manageable, justifiable phases.
- The best approach to selecting individual projects is to target positive incremental ROI for each project.
- To achieve the full agility benefits of the SOA, it is important to approach the processes from the Service-oriented perspective.
- In the current environment, being able to save customers money is often the only way a consulting firm can get an engagement at all.
- As Service-oriented process tools mature, system integration will no longer be a separate activity, but will be subsumed into the process orchestration and choreography activities within the Service-oriented process tools.
- The business process design, optimization, and execution consulting market will come to displace the system integration market.

- System integrators will still find their integration work diminishing as their customers adopt SOAs, and will either need to transition their skills to the Service-oriented process arena, or risk having their market erode substantially.
- Many consulting firms will have to undergo extensive retraining and reorganization.

5.3. Figures

VI. Profiled Professional Services Organizations

The 22 PSOs who accepted ZapThink's invitation to be included in this report represent a reasonably broad cross-section of the world's consulting firms that are tackling SOA or Web Services engagements to some extent. The fact that a particular PSO is not on the list of profiled firms should not necessarily be taken as an indication that they are any less able to offer SOA services than the firms listed here.

6.1. Small Architectural Consulting Firms

Small consulting firms typically offer a narrow range of services, making them "boutique" firms. Their customers, however, might be of any size.

6.1.1. Herzum Software

Please see ZapNote ZTZN-1047

6.1.2. Momentum Software

Please see ZapNote ZTZN-1067

6.1.3. netNumina

Please see ZapNote ZTZN-1070

6.2. Small IT Consulting Firms

6.2.1. Japara Solutions

Please see ZapNote ZTZN-1057

6.2.2. Parcs Consulting

Please see ZapNote ZTZN-1077

6.3. Midsize IT Consulting Firms

6.3.1. *Avanade*

Please see ZapNote ZTZN-1007

6.3.2. *Beacon IT*

Please see ZapNote ZTZN-1010

6.3.3. *Novell*

Please see ZapNote ZTZN-1071

6.3.4. *Sapient*

Please see ZapNote ZTZN-1086

6.3.5. *Smart421 Solutions*

Please see ZapNote ZTZN-1091

6.3.6. *ThoughtWorks*

Please see ZapNote ZTZN-1099

6.3.7. *Wellfound Technology*

Please see ZapNote ZTZN-1108

6.4. Large IT Consulting Firms

Large IT consulting firms can afford to establish deep relationships with their clients, and also typically conduct the most complex, "heavy lifting" projects.

6.4.1. *CSC*

Please see ZapNote ZTZN-1024

6.4.2. *EDS*

Please see ZapNote ZTZN-1032

6.4.3. *MphasiS*

Please see ZapNote ZTZN-1068

6.4.4. *Samsung SDS*

Please see ZapNote ZTZN-1084

6.5. Small/Midsize Full-Service PSOs

Full-service PSOs offer management consulting as well as IT consulting services. Such companies must be of a certain size to be able to offer such a breadth of capabilities.

6.5.1. *Fujitsu Consulting*

Please see ZapNote ZTZN-1045

6.5.2. *Geniant*

Please see ZapNote ZTZN-1046

6.6. Large Full-Service PSOs

6.6.1. *Deloitte Consulting*

Please see ZapNote ZTZN-1028

6.6.2. *IBM Global Services*

Please see ZapNote ZTZN-1050

6.7. Software Vendors

ZapThink has included two software vendors in this list, because of the unique consulting offerings they provide.

6.7.1. *Microsoft*

Please see ZapNote ZTZN-1066

6.7.2. *Swingtide*

Please see ZapNote ZTZN-1094

Related Research

- *Service-Oriented Integration* Report (ZTR-WS103)
- *XML and Web Services Security* Report (ZTR-WS104)
- *XML Proxies* Report (ZTR-DI101)
- *Testing Web Services* Report (ZTR-WS105)
- *Service-Oriented Management* Report (ZTR-WS106)
- *Service-Oriented Architecture: Tools and Best Practices* Report (ZTR-WS107)
- *Service-Oriented Process* Report (ZTR-WS108)
- *On Demand Technologies & Trends* Report (forthcoming)

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About ZapThink, LLC

ZapThink is an IT market intelligence firm that provides trusted advice and critical insight into XML, Web Services, and Service Orientation. We provide our target audience of IT vendors, service providers and end-users a clear roadmap for standards-based, loosely coupled distributed computing – a vision of IT meeting the needs of the agile business.

ZapThink's role is to help companies understand these IT products and services in the context of SOAs and the vision of Service Orientation. ZapThink provides market intelligence to IT vendors who offer XML and Web Services-based products to help them understand their competitive landscape and how to communicate their value proposition to their customers within the context of Service Orientation, and lay out their product roadmaps for the coming wave of Service Orientation. ZapThink also provides implementation intelligence to IT users who are seeking guidance and clarity into how to assemble the available products and services into a coherent roadmap to Service Orientation. Finally, ZapThink provides demand intelligence to IT vendors and service providers who must understand the needs of IT users as they follow the roadmap to Service Orientation.

ZapThink's senior analysts are widely regarded as the "go to analysts" for XML, Web Services, and SOAs by vendors, end-users, and the press. They are in great demand as speakers, and have presented at conferences and industry events around the world. They are among the most quoted industry analysts in the IT industry.

ZapThink was founded in October 2000 and is headquartered in Waltham, Massachusetts. Its customers include Global 1000 firms, public sector organizations around the world, and many emerging businesses. ZapThink Analysts have years of experience in IT as well as research and analysis. Its analysts have previously been with such firms as IDC and ChannelWave, and have sat on the working group committees for standards bodies such as RosettaNet, UDDI, CPExchange, ebXML, EIDX, and CompTIA.

Call, email, or visit the ZapThink Web site to learn more about how ZapThink can help you to better understand how XML and Web Services impact your business or organization.

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